

Powdery Mildew of Flowering Dogwood¹

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INTRODUCTION: Powdery mildew, caused by the fungus *Phyllactinia guttata* (Wallr.:) Lev. (syn. *P. corylea* (Pers.) P. Karst.), was particularly severe on flowering dogwood, *Cornus florida* L., in Florida during 1994, probably due to very favorable conditions for disease development. Fungi that cause powdery mildews are obligate parasites; i.e., they grow only on living host tissue. Thus far, attempts to grow powdery mildew fungi on artificial media have been unsuccessful. Powdery mildew fungi mainly attack plant leaf surfaces and tender aerial shoots where they produce mats of white mycelium and powdery conidia (spores), giving the disease its descriptive name.

SYMPTOMS AND SIGNS OF THE DISEASE: The disease first appears on young dogwood leaves as raised circular areas covered with a powdery white fungus. Infected leaves become distorted as they enlarge (Fig. 1); on older leaves, distortion is less pronounced. Leaf lesions may eventually become necrotic. Slow debilitation of the plant parts may occur. Infected flowers become distorted and fail to develop properly. The fungus is superficial; haustoria penetrate only the host epidermal cells. Hyphae on the surface develop conidiophores and produce chains of egg-shaped conidia. Cleistothecia are often formed in cool weather. These are spherical fruiting structures with variously shaped appendages which provide identification characters (Spencer 1978). Cleistothecia first appear on the mycelial mat as white structures, turning light brown, and then black. Mature cleistothecia liberate ascospores. In the mild winters of the southeastern United States, cleistothecia are less frequently produced (Sinclair *et al.* 1987).



Fig. 1. Powdery mildew on leaves of *Cornus florida* showing characteristic powdery spots and leaf distortion.

CONDITIONS FOR DISEASE DEVELOPMENT:

Powdery mildew spores can germinate and infect plant tissue when the relative humidity is high, but not when there is a film of water on the plant surface; therefore, the disease may be more severe in warm, dry climates than in constantly humid areas (Agrios 1988). Spore germination is inhibited by free water, whereas most fungi require free water for germination. Powdery mildew fungi may overwinter as cleistothecia, as mycelium or spores trapped in plant parts such as buds, or may continue to produce mycelium and conidia on the plants. Based upon cleistothecia produced on dogwood in colder environments, it is assumed that the powdery mildew fungus which attacks *C. florida* throughout the southeast is *P. guttata* (Farr *et al.* 1989).

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It occurs on many hardwood species. At least six *formae speciales* (specialized subgroups) have been described (Sinclair *et al.* 1987). Host specialization is common in powdery mildew. Some powdery mildews are restricted to a single plant species, while others attack many plant species (Sinclair *et al.* 1987).

CONTROL: Bayleton 25% WP (triademifon) is specifically listed as a control of powdery mildew of dogwood in Florida (Simone *et al.* 1993). Plant debris containing overwintering fungal structures should be removed and destroyed to reduce local inoculum.

SURVEY & DETECTION: Look for white circular leaf lesions covered with a powdery fungus. Enlarging leaves become distorted. The disease should not be confused with the obviously necrotic leaf spots caused by *Elsinoe corni* Jenk. & Bot., *Septoria cornicola* Desm., or *Discula destructiva* sp. nov.

LITERATURE CITED:

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